

What is measles?

Measles is a disease caused by a highly contagious virus that lives in the nose and throat of an infected person. It can easily spread to others through coughing and sneezing and can live in an airspace for **up to two hours** after a person with measles has occupied the area. The average incubation period for measles is approximately 10 to 12 days but can range from 7 to 21 days. People with measles are usually considered infectious from 4 days before rash onset to 4 days after rash onset. Approximately 30% of reported measles cases develop complications, such as pneumonia or encephalitis, most commonly in children younger than 5 years and adults 20 years and older.

What are the signs and symptoms of measles?

Measles is characterized by a prodrome of **fever, malaise, cough, coryza** (a stuffy or runny nose) and **conjunctivitis** – also known as “the 3 Cs” of measles. The patient may also present with **Koplik spots** inside the mouth that appear 2 to 3 days after prodromal symptoms begin. These symptoms will be followed by a **maculopapular rash** that starts on hairline, face and neck and spreads down the body to the trunk and extremities over the next few days. The maculopapular lesions are generally discrete; however the rash may become confluent, particularly on the upper body. During this time the fever will also typically spike to 104°F or more. The rash usually lasts 5 to 6 days and will fade in the same order that it appeared, from head to extremities.

Are there any risk factors for measles?

When considering a measles diagnosis in patients, healthcare providers are encouraged to ask about these three risk factors for contracting measles:

- **Vaccination status** (documentation of two age-appropriate doses)
- **Travel within the past month**, especially to any states or countries that are currently experiencing outbreaks
 - Case counts for measles cases in the United States can be found [here](#) (updated weekly)
 - CDC Travel notices for countries experiencing measles outbreaks can be found [here](#) by entering “Measles” in the search bar
- **Contact with any individuals experiencing symptoms within the past month**

What are the current recommendations for measles immunization?

The Advisory Committee on Immunization Practices (ACIP) recommends **two doses of measles, mumps, and rubella (MMR) vaccine**, starting with the first dose at 12 to 15 months and the second dose at 4 to 6 years of age. Children and adults who are not immunized or are not up-to-date with immunization should receive MMR vaccine. Two doses of MMR vaccine are considered about 97% effective in preventing measles infection; however, fully vaccinated persons may still contract the disease. Healthcare providers are encouraged to be vigilant for clinical symptoms compatible with measles despite vaccination status.

What do I do if I suspect that my patient has measles?

1. **Promptly isolate the patient to prevent transmission.**

Mask suspect patients immediately. If a surgical mask cannot be tolerated, other practical means of containment should be implemented. Do not allow patients to remain in the waiting area or other common areas and isolate them immediately in a negative pressure room if one is available.

2. **Immediately report the case to the local health department or IDOH.**

Per the Indiana Communicable Disease Rule (410 IAC 1-2.5), measles should be reported **immediately upon suspicion**. Do not wait for confirmatory lab results before reporting a suspect case to public health authorities. Call the local health department or IDOH right away if you suspect that your patient has measles. To report a suspect case after business hours (8:15 a.m. – 4:45 p.m. M-F), please contact the IDOH epidemiologist-on-call at 317-233-1325.

A flowchart on when to contact IDOH for testing authorization and reporting is located [here](#).

3. **Arrange for appropriate testing.** See below for detailed specimen testing information.
4. **Tell patient to isolate for four days after rash onset or until test results come back negative.**
5. **Disinfect patient room and do not use it for at least 2.5 hours after patient has left.**

What testing should I order if I suspect that my patient has measles?

IDOH strongly recommends that providers collect a nasopharyngeal swab if within three days of rash onset as well as serology. Polymerase chain reaction (PCR) or culture from a nasopharyngeal swab are the most reliable methods to test for measles. Acute measles infection can also be confirmed by the presence of serum measles IgM and a significant rise in IgG antibody titer in acute- and convalescent-phase serum specimens. Appropriate laboratory specimens are essential for the confirmation of measles virus, as a number of other etiologies can cause similar symptoms. Additional guidance on lab testing is outlined below:

- Testing for **both measles PCR and serology** is available at the IDOH Laboratories. **Specimens must be authorized** by IDOH before submission. The current approved specimen type for IDOH Serology is serum and for PCR method a Nasopharyngeal (NP) swab. Please contact the IDOH Infectious Disease Epidemiology & Prevention Division at 317-233-7125 for testing information and additional submission guidance.
 - To request specimen authorization after business hours (8:15 a.m. - 4:45 p.m. M-F), please contact the IDOH epidemiologist-on-call at 317-233-1325.
- Results for specimens that have not been approved prior to submission to the IDOH Laboratories may be significantly delayed. Results will be released to the submitting laboratory. If a specimen was submitted through an intermediary reference laboratory, providers are encouraged to check with those entities for results prior to contacting IDOH. PCR and culture testing are also available commercially, but turnaround times may be longer than an authorized specimen sent to the IDOH Laboratories.
- Call IDOH Laboratories (317-921-5500), for assistance with submitting specimens for testing **after receiving authorization**.



What infection control steps can we take in our facility to prevent the potential spread of measles?

- **Before the patient arrives**
 - If a patient with a febrile rash illness calls to schedule an appointment, query the patient about any risk factors such as **recent travel or exposure to sick contacts**.
 - If measles is strongly suspected in a patient who has not yet presented in a facility, encourage the patient to seek evaluation at a facility with an airborne infection isolation room, if possible.
 - If possible, **schedule suspect measles patients at the end of the day** or when few other patients will be present.
- **After the patient has arrived**
 - **Mask suspect measles patients immediately.** If a mask cannot be tolerated, implement other practical means of source containment. Do not allow suspect measles patients to remain in the waiting area or other common areas; isolate them immediately in an airborne infection isolation room if one is available. For more information: <http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html>
 - Allow only healthcare personnel with documentation of two doses of live measles vaccine or laboratory evidence of immunity (measles IgG positive) to enter the patient's room. Regardless of immunity, **healthcare personnel should use respiratory precautions when working with a suspect measles patient.**
 - **Notify any location where the patient is being referred for additional clinical evaluation or laboratory testing.** Instruct suspect measles patients and exposed persons to inform all healthcare providers of the possibility of measles prior to entering a healthcare facility.
 - To minimize the risk of measles transmission in healthcare settings, **healthcare personnel should disinfect and not use the room for 2.5 hours after seeing the suspect measles case.**

More information on measles infection control in healthcare facilities can be found [here](#).

When to give measles post-exposure prophylaxis (PEP) for non-symptomatic susceptible contacts

To determine appropriate PEP:

- Determine patient's risk factor and identify time from first exposure to measles case.
- Read the reminders and footnotes for definitions and special considerations.
- Contact the local health department or IDOH with questions or if further guidance is needed.



Risk Factor	Time from first exposure	
	< 72 hours	72 hours through day 6
Infant less than 6 months old	Give intramuscular IG (IGIM): 0.5 mL/kg	Give IGIM: 0.5 mL/kg
Infant ages 6 through 11 months	Give MMR vaccine if no contraindications	Give IGIM: 0.5 mL/kg
Susceptible close contacts over 1 year old	Give MMR vaccine if no contraindications	Give IGIM 0.5 mL/kg: max dose of 15 mL
Susceptible pregnant woman	Give intravenous IG (IGIV): 400 mg/kg	Give IGIV: 400 mg/kg
Severely immunocompromised	Give IGIV: 400 mg/kg	Give IGIV: 400 mg/kg

More information regarding contraindications can be found here:

<https://www.cdc.gov/vaccines/vpd/mmr/hcp/recommendations.html>

**If IG needs to be administered, please contact IDOH, as authorization is required.

How do I interpret my patient's serology test results?

A positive IgM test is a confirmatory lab test for measles that indicates that the patient has had recent or ongoing infection with measles. A negative IgM test indicates the patient does not have the measles-specific IgM antibody in the blood, meaning the patient is negative for measles.

Measles Exposure History	IgM	IgG
Unvaccinated; no history of measles	• (typically detectable 1-4 days post rash to 6-8 weeks)	• or – (typically detectable 7-10 days post rash)
Vaccinated	•/–*	•

*Vaccinated persons may not have an IgM response or it may not be detected depending on timing of collection. PCR testing is the best method to confirm cases.

Is there any treatment for measles?

No specific measles antiviral therapy is available. Medical care is supportive to help relieve symptoms and address complications.



Other Measles Resources for Providers:

IDOH Measles Page: <https://www.in.gov/isdh/25456.htm>

CDC Measles Page for Healthcare Providers: <https://www.cdc.gov/measles/hcp/index.html>

